

WHAT IS CLAIMED IS:

1. A method for collision avoidance in a wireless communication network wherein a first subset of communications devices exchange data through transmissions using a first protocol and a second subset of communications devices exchange data through transmissions using a second protocol and wherein the transmissions occur over at least partially overlapping frequencies, the method comprising:

acquiring transmission characteristics for the transmissions of the first protocol and the transmissions of the second wireless protocol;

analyzing the transmission characteristics to determine an imminent collision between the transmissions of the first protocol and the transmissions of the second protocol; and

moderating the transmissions of at least one of the protocols to avoid the imminent collision identified by the analysis of the transmission characteristics.

2. The method of collision avoidance of Claim 1, wherein acquiring transmission characteristics comprises acquiring an order of transmitted data.

3. The method of collision avoidance of Claim 1, wherein acquiring transmission characteristics comprises acquiring a timing of transmitted data.

4. The method of collision avoidance of Claim 1, wherein acquiring transmission characteristics comprises acquiring a frequency that the data will be transmitted on.

5. The method of collision avoidance of Claim 1, wherein acquiring transmission characteristics comprises acquiring a channel that the data will be transmitted on.

6. The method of collision avoidance of Claim 1, wherein the first protocol or the second protocol comprises a frequency-hopping spread spectrum (FHSS) protocol.

7. The method of collision avoidance of Claim 6, wherein the FHSS protocol further comprises a Bluetooth protocol.

8. The method of collision avoidance of Claim 1, wherein the first protocol or the second protocol comprises a direct sequence spread spectrum (DSSS) protocol.

9. The method of collision avoidance of Claim 8, wherein the DSSS protocol comprises an IEEE 802.11 DSSS protocol or an IEEE 802.11b DSSS protocol.

10. The method of collision avoidance of Claim 1, wherein the imminent collision is avoided by moderating the transmissions of the first protocol during time frames where the first protocol and the second protocol are overlapping.

5 11. The method of collision avoidance of Claim 1, wherein the first or second protocols comprise fixed-frequency protocols.

12. The method of collision avoidance of Claim 1, wherein the first or second protocols comprise alternating-frequency protocols.

10 13. The method of Claim 1, wherein analyzing the data exchange further comprises determining a service level for the first protocol and a service level for the second protocol.

15 14. The method of Claim 13, wherein the service level for the first protocol and the service level for the second protocol are degraded by collisions between transmissions using the first protocol and the second protocol.

15 15. The method of Claim 14, wherein the service level for the first protocol and the service level for the second protocol are analyzed to determine if the service levels are in an acceptable range.

20 16. The method of Claim 15, wherein the service level for the first protocol and the second protocol are maintained within the acceptable range by moderating the transmissions of at least one of the protocols.

25 17. A method for collision avoidance in a wireless communication network wherein a first protocol and a second protocol are utilized by a plurality of communications devices to exchange data and information over at least partially overlapping frequencies, the method comprising:

acquiring transmission characteristics for data packets transmitted using the first protocol and data packets transmitted using the second protocol;

30 analyzing the transmission characteristics to determine imminent collisions in the transmission of the data packets using the first protocol and data packets transmitted using the second protocol; and

moderating data exchange in at least one of the protocols to avoid imminent collisions in the transmission of the data packets using the first protocol and data packets transmitted using the second protocol.

18. The method of collision avoidance of Claim 17, wherein acquiring
5 transmission characteristics comprises acquiring an order of transmitted data packets.

19. The method of collision avoidance of Claim 17, wherein acquiring
transmission characteristics comprises acquiring a timing of transmitted data packets.

20. The method of collision avoidance of Claim 17, wherein acquiring
transmission characteristics comprises acquiring a frequency that the data packets will
10 be transmitted on.

21. The method of collision avoidance of Claim 17, wherein acquiring
transmission characteristics comprises acquiring a channel that the data packets will be
transmitted on.

22. The method of collision avoidance of Claim 17, wherein the first
15 protocol or the second protocol comprises a frequency-hopping spread spectrum (FHSS)
protocol.

23. The method of collision avoidance of Claim 17, wherein the first
protocol or the second protocol comprises a direct sequence spread spectrum (DSSS)
20 protocol.

24. The method of collision avoidance of Claim 17, wherein the first and the
second protocols control subsets of communication devices that have at least partially
overlapping transmission areas.

25. The method of collision avoidance of Claim 17, wherein the imminent
collisions are avoided by moderating the transmission of data packets in the first
protocol or the second protocol such that the data packets of each protocol are
transmitted in a non-overlapping manner.

26. The method of Claim 17, wherein analyzing the data transmissions
further comprises identifying traffic types and determining quality of service for the
25 traffic types.

27. The method of Claim 26, wherein the traffic types comprise a voice quality traffic type and a data quality traffic type.

28. The method of Claim 26, wherein moderating data exchange in at least on the protocols further comprises prioritizing the traffic types based on the quality of service for the traffic types.

5 29. The method of Claim 26, wherein moderating data exchange in at least one of the protocols further comprises prioritizing the traffic types based upon desirable transmission quality statistics.

10 30. The method of Claim 29, wherein the transmission quality statistics comprise packet loss rates.

31. The method of Claim 29, wherein the transmission quality statistics comprise packet delays.

32. The method of Claim 29, wherein the transmission quality statistics comprise packet throughput.

15 33. A data collision rectification device for use in a wireless communication network wherein frequency-overlapping protocols comprising a first protocol and a second protocol operate to exchange information between a plurality of data transfer nodes, the device comprising;

20 a coordination module which identifies transmission statistics during the exchange of information between the plurality of data transfer nodes and subsequently assesses the transmission statistics to determine if an acceptable quality of service is maintained; and

a synchronization module which moderates information exchange in at least one of the frequency-overlapping protocols to maintain acceptable quality of service.

25 34. The data collision rectification device of Claim 33, wherein the coordination module applies a quality monitoring schema which distinguishes between one or more traffic types associated with the first and the second frequency-overlapping protocols and assesses if acceptable quality of service is maintained for each traffic type.

35. The data collision rectification device of Claim 34, wherein the synchronization module moderates the traffic types to maintain acceptable quality of service.

5 36. The data collision rectification device of Claim 34, wherein the coordination module assesses quality of service by comparing current quality of service for the traffic types with defined quality of service levels.

37. The data collision rectification device of Claim 34, wherein the current quality of service is determined by assessing the transmission characteristics of the traffic types.

10 38. The data collision rectification device of Claim 34, wherein the traffic types comprise voice quality traffic types or data quality traffic types.

39. The data collision rectification device of Claim 34, wherein the traffic types have individual quality of service requirements which must be met to maintain acceptable quality of service.

15 40. The data collision rectification device of Claim 33, wherein the frequency-overlapping protocols comprise a frequency-hopping spread spectrum (FHSS) protocol.

41. The data collision rectification device of Claim 40 wherein the FHSS protocol further comprises a Bluetooth protocol.

20 42. The data collision rectification device of Claim 33, wherein the frequency-overlapping protocols comprise a direct sequence spread spectrum (DSSS) protocol.

43. The data collision rectification device of Claim 42, wherein the DSSS protocol comprises an IEEE 802.11 DSSS protocol or IEEE 802.11b DSSS protocol.

25 44. The data collision rectification device of Claim 33, wherein the frequency-overlapping protocols comprise fixed-frequency protocols or alternating-frequency protocols.

45. A method for assuring quality of service in a wireless communication network having a plurality of traffic types transmitted over at least partially overlapping frequencies, the method comprising:

associating one or more service levels with each of the plurality of traffic types representative of desired quality of service ranges;

associating a priority value with each of the plurality of traffic types used to rank each of the traffic types with respect to each other;

5 assessing the current quality of service for the traffic types;

ordering the traffic types to maintain the desired quality of service for each traffic type within the service level; and

moderating the transmission of at least one of the plurality of traffic types to reduce collisions between the plurality of traffic types to improve the current quality of 10 service for the traffic types.

46. The method for assuring quality of service of Claim 45 wherein assessing the current quality of service for the traffic types comprises identifying impending collisions between a first traffic type and a second traffic type during the transmission of the plurality of traffic types.

15 47. The method for assuring quality of service of Claim 46, wherein upon identifying impending collisions between the first traffic type and the second traffic type, at least a portion of a first traffic type with a lower priority value is moderated to increase current quality of service in a second traffic type with a higher priority value.

20 48. The method for assuring quality of service of Claim 46, wherein upon identifying impending collisions between the first traffic type and the second traffic type, at least a portion of the second traffic type with a higher priority value is moderated to increase current quality of service of the first traffic type with a lower priority value.

25 49. The method for assuring quality of service of Claim 46, wherein the first traffic type and second traffic type comprise Bluetooth or IEEE 802.11B wireless local area network protocols.

50. The method for assuring quality of service of Claim 46, wherein the first traffic type and second traffic type comprise Bluetooth or IEEE 802.11 wireless local area network protocols.

51. The method for assuring quality of service of Claim 45, wherein assessing the current quality of service further comprises identifying reductions in data throughput for each traffic type below the associated service level.

52. The method for assuring quality of service of Claim 51, wherein the data throughput is improved by reducing collisions between the plurality of traffic types.